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PENSOFT

Sciopemyia vattierae (Le Pont & Desjeux, 1992) (Diptera, Psychodidae, Phlebotominae): new record from Acre state, Brazil

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Abstract

Sciopemyia vattierae (Le Pont & Desjeux, 1992) (Diptera, Psychodidae, Phlebotominae) is reported for the first time from Brazil. Five male and 4 female specimens were collected using HP light traps set up in a rural area of the municipality of Rio Branco, state of Acre, Brazil, from December 2014 to January 2016. This species was previously known only in Bolivia, Peru, and Colombia. Our new record extends the known distribution of *S. vattierae* to the Amazonian region of Acre and represents a new national record for Brazil.

Key words

Sand flies; geographic distribution; Amazonia; South America.

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Introduction

Phlebotomine sand flies are dipterans of public health importance for transmitting parasites of the genus *Leishmania* (Ross, 1903), *Bartonella*, Strong et al. 1915, and arboviruses. It is estimated that there are about 530 species of Phlebotominae in the Americas (Shimabukuro et al. 2017), and the Amazonia biome contributes the greatest richness and diversity of taxa. In the state of Acre, 83 species of sand flies have been reported, which corresponds to 30% of the species found in Brazil, according to the taxonomic catalog of the fauna of Brazil (Shimabukuro et al. 2018).

The Amazon region is considered endemic for American Cutaneous Leishmaniasis (ACL), and studies have been concentrated on the vectorial role of phlebotomine sand flies. However, there are still incipient studies on the ecological and biological aspects of the phlebotomine fauna in the state of Acre, which is rich and diverse with recent descriptions and new records of species (Tojal et al. 2006, Teles et al. 2013, 2016, Araújo-Pereira et al. 2014, 2017, Brilhante et al. 2017). The present study had, as its objective, to report the first record of *Sciopemyia vattierae* (Le Pont & Desjeux, 1992) in Acre and Brazil, which increases the number of species for this state and for Brazil.

Methods

The specimens of phlebotomine sand flies were collected between December 2014 and January 2016 in the municipality of Rio Branco, state of Acre, in a rural area and urban forest of the municipality (09°59′11″S, 067°49′52″W) using 6 HP light traps installed at 18:00 and collected at 6:00 once a month during the study period; more details are available at Ávila et al. (2018). The specimens were processed according to Forattini (1973) and identified according to the taxonomic key proposed by Galati (2003).

The specimens were collected under a permanent license number 32669-4 to collect zoological material granted to Reginaldo P. Brazil by the Ministério do Meio Ambiente (MMA), Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis (IBAMA), Instituto Chico Mendes de Conservação da Biodiversidade (ICMBio), and Sistema de Autorização e Informação em Biodiversidade (SISBIO).

Results

New records. Brazil: Acre: Rio Branco: roadway Transacreana, hen house (09°59′46.8″ S, 067°58′51.7″ W), Márcia Moreira de Ávila and Andreia Fernandes Brilhante, collectors, 9 February 2015 (first record) 1 individual (male); Brazil: Acre: Rio Branco: roadway Transacreana, Riozinho do Rola (10°05′03.5″ S, 067°53′54.3″ W), Márcia Moreira de Ávila and Andreia Fernandes Brilhante, collectors, 15 June 2015 (first record) 2 individuals (male and female); Brazil: Acre: Rio Branco: roadway Transacreana, hen house (09°59′46.8″ S, 067°58′51.7″ W), Márcia Moreira de Ávila and Andreia Fernandes Brilhante, collectors, 5 July 2015, 1 individual (female); Brazil: Acre: Rio Branco: roadway Transacreana, forest area (09°59′49.8″ S, 067°58′50.7″ W), Márcia Moreira de Ávila and Andreia Fernandes Brilhante, collectors, 10 August 2015, 1 individual (male); Brazil: Acre: Rio Branco: roadway Transacreana, forest area (09°59′49.8″ S, 067°58′50.7″ W), Márcia Moreira de Ávila and Andreia Fernandes Brilhante, collectors, 15 September 2015, 1 individual (male); Brazil: Acre: Rio Branco: urban area, Horto Florestal (09°56′51.7″ S, 067°49′42.8″ W), Márcia Moreira de Ávila, collector, 7 October 2015, 1 individual (female); Brazil: Acre: Rio Branco: urban area, Horto Florestal (09°56′51.7″ S, 067°49′42.8″ W), Márcia Moreira de Ávila, collector, 16 December 2015, 1 individual (female); Brazil: Acre: Rio Branco: urban area, Horto Florestal (09°56′51.7″ S, 067°49′42.8″ W), Márcia Moreira de Ávila, collector, 20 January 2016, 1 individual (male).

A total of 2,517 phlebotomine sand flies were collected. The fauna that compose 43 species and their ecological analyses are published in *Ávila et al.* (2018). Among those phlebotomine sand flies, 5 males and 4 females of *Sciopemyia vattierae* were identified. They were collected in rural areas (09°59′49.8″ S, 067°58′50.7″ W) and urban forest (09°56′51.7″ S, 067°49′42.8″ W) (Fig. 1). The slides of 4 sand fly specimens were deposited under the number E-15630, E-15631 (female), E15632 and E-15633 (male) in the laboratory of phlebotomine sand flies of the Faculty of Public Health of the University of São Paulo. The other 5 specimens are in the private collection of the first author.

Identification. The genus *Sciopemyia* Barretto, 1962 is characterized by antennal flagellomeres relatively long with simple ascoids. Palpus segment V shorter or subequal to palpus segment III. Female cibarium with 4 horizontal teeth, with the inner pair separated by a relatively wide gap. Male genitalia: style with 4 spines and no subterminal seta. According to Galati (2003, 2016), the genus *Sciopemyia* includes 8 species: *S. fluviatilis* (Floch & Abonnenc, 1944); *S. microps* (Mangabeira, 1942); *S. nematoducta* (Young & Arias, 1984); *S. pennyi* (Arias & Freitas, 1981); *S. preclara* (Young & Arias, 1984); *S. servulolimai* (Damasceno & Causey, 1945); *S. sordellii* (Shannon & Del Ponte, 1927); and *S. vattierae*. Among these species, *S. vattierae* is morphologically most similar to *S. sordellii*.

The presence of papilla on the flagellomere III distinguishes *S. vattierae* and *S. sordellii* from the other species of the genus, in which the papilla on the flagellomere III is absent. The distinction between males of these 2 species was based on morphometric characters (lengths of flegellomere I and aedeagal ducts) (Fig. 2A), and morphological characteristics of the females: *S. vattierae* presents the terminal knob clearly separated from the spermatheca, and it is sessile in *S. sordellii* (Fig. 2B).

Discussion

Species of the genus *Sciopemyia* are widely distributed in Latin America, but most are reported from Brazil, such as *S. microps*, *S. nematoducta*, *S. servulolimai*, and *S. pennyi*. The other species have been reported from other countries, such as *S. fluviatilis* from French Guiana, *S. preclara* from Colombia and Peru, and *S. sordelli* from Argentina (Shimabukuro et al. 2017).

Sciopemyia vattierae was described by Le Pont and Desjeux (1992) from specimens collected in the Bolivian Amazon rainforest of Yucumo (Bolivia). The female was redescribed by Bejarano et al. (2006) from specimens collected in La Macarena, Meta Department, Colombia. Currently, this species' distribution includes areas of tropical and humid forests of Bolivia, Peru, and Colombia, and the localities in which this species has been recorded suggests that its distribution is cis-Andean (Le Pont and Desjeux 1992, Ogusuku et al. 2001, Bejarano et al. 2006, Cabrera et al. 2009, Trujillo et al. 2013).

Species of this genus feed on amphibians and cold-blooded animals, *Sciopemyia sordellii* naturally infects frogs with parasites of the genus *Trypanosoma* (Ferreira et al. 2008). Regarding the parasites of the genus *Leishmania*, *S. sordellii* was detected with subgenus

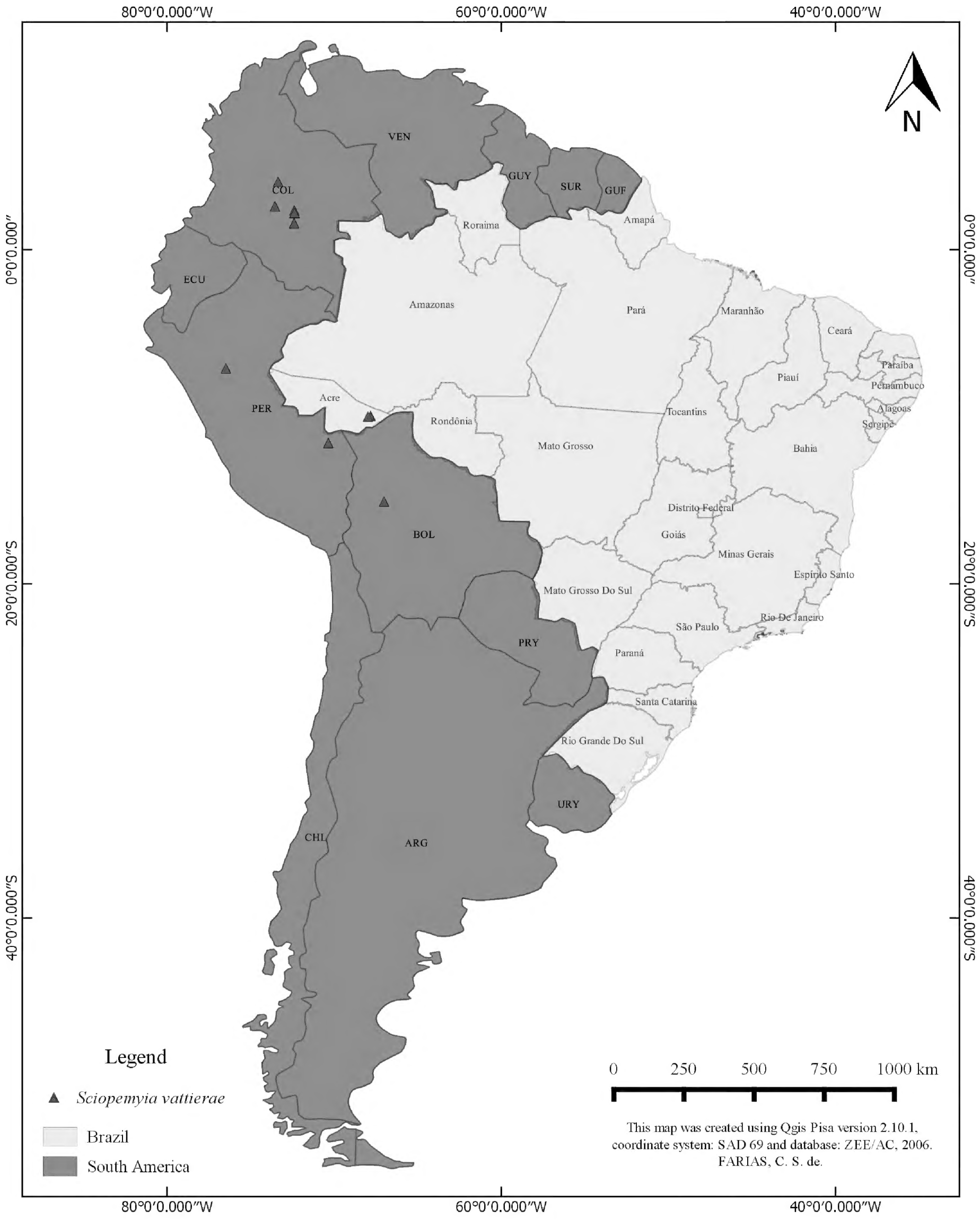

Figure 1. Map of the geographical distribution of *Sciopemyia vattierae* in South America.

Leishmania in cave areas of Minas Gerais state (Carvalho et al. 2017).

We collected specimens of *S. vattierae* in a forested area near the peridomicile. In faunal surveys in Brazil, the species of this genus are generally collected in rural forest and anthropic environments (Gomes et al. 2009, Alves et al. 2012, Ramos et al. 2014). However, in comparison to other genera and species of sand flies, our study and that of Ávila et al. 2018 show low population densities of *S. vattierae*.

Thus, with our new records, we see an increase in the geographical distribution of *S. vattiearae* in South America (Fig. 1), as well as in the number of species of sand flies in Brazil and Acre.

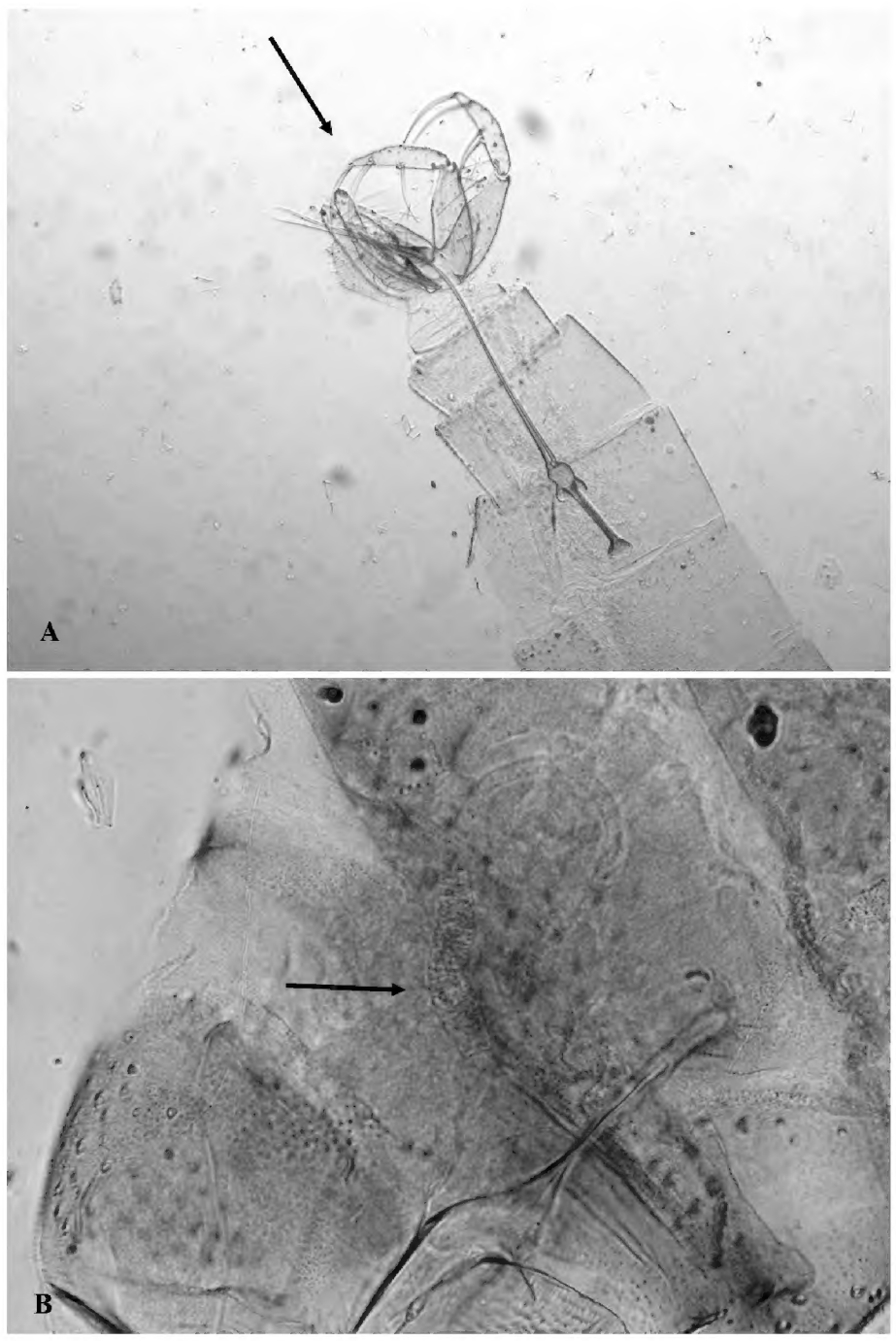

Figure 2. Specimens of *Sciopemyia vattierae* collected in Rio Branco, Acre, Brazil. **A.** Terminalia of the male, 100 µm. **B.** spermatheca of the female, 10µm. The arrows indicate the genital structures.

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Authors' Contributions

MMA and RPB designed the study. AFB, MMA, ASC and EABG conducted the field work. MMA, AFB, RPB and EABG prepared the materials and identified the phlebotomine specimens. MMA, AFB and RPB wrote the text.

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